

REMARKS

Applicants provide the present Request for Reconsideration to address the issues raised in the Official Action mailed May 18, 2005. Applicants appreciate the thorough review of the present application and the indication of allowance of Claims 1, 3-4, 6, 9, 12, 14, 16 and 18-19.

Claims 13 and 20 stand rejected under 35 USC § 103(a) as being unpatentable over Xu et al., "Improved Performance and Reliability of N₂O-Grown Oxynitride on 6H-SiC," IEEE Electron Device Letters, Vol. 21, No. 6 (June 2000) (hereinafter, "Xu et al.").

With respect to Claim 13, the Official Action of October 28, 2004 stated that Xu et al. discloses "fabricating a nitrided oxide layer on a silicon carbide substrate, followed by a step of annealing in a forming gas environment (which comprises hydrogen) at 410 °C for 30 minutes." Official Action of 10/28/2004, p. 5. In response, Applicants noted that Claim 13 recites "performing subsequent processing steps carried out at temperatures of about 400 °C or greater in a hydrogen containing environment," and that the Official Action of 10/28/2004 did not appear to cite to any portion of Xu et al. or JP '461 as disclosing these recitations of Claim 13.

In rejecting Claim 13 as unpatentable over Xu et al., the Official Action of May 18, 2005 stated that "[a]pplicant first argued that the references do not teach a temperature 400 °C or greater (p.8 second paragraph). The examiner disagrees. It is noted that in the 'Experiments' section, a temperature of 410 °C is recited."

While Xu et al. do teach performing a single anneal of a nitrided oxide layer in forming gas at 410 °C, Applicants note that Claim 13 recites "annealing the nitrided oxide layer in an environment containing hydrogen; and performing subsequent processing steps carried out at temperatures of about 400 °C or greater in a hydrogen containing environment." (Emphasis added). The forming gas anneal taught by Xu et al. appears to be a contact anneal, since it is performed after formation of MOS capacitor electrodes. See Xu et al., Experiments. To the extent that the anneal in forming gas taught by Xu et al. corresponds to

"annealing the nitrided oxide layer in an environment containing hydrogen" as recited in Claim 13, Xu et al. still fail to teach or suggest performing subsequent processing steps carried out at temperatures of about 400 °C or greater in a hydrogen containing environment, as recited in Claim 13. Accordingly, Applicants submit that Claim 13 is patentable over Xu et al.

With respect to Claim 20, the Official Action of May 18, 2005 stated that "[a]pplicant next argues that Xu teaches away from using an annealed existing nitride (p.8 third paragraph). The Examiner disagrees." Applicants note that the Amendment filed on January 28, 2005 mistakenly referred to an "existing nitride" in the discussion of Xu et al. on page 8, third full paragraph. The discussion on page 8 of the January 28, 2005 Amendment should have stated that Claim 20 recites that the nitrided oxide is an annealed existing oxide, and that Xu et al. teaches away from annealing an existing oxide in N₂O. In particular, the N₂ON sample of Xu et al., which is the sample of an oxide that is annealed after formation in N₂O, is described as having deteriorated performance for p-type SiC. See Xu et al. "Results and Discussion". Furthermore, for n-type SiC, the N₂ON sample is described as having "slightly improved C-V behavior." Xu et al., p. 299. However, this improvement is not attributed to the N₂O anneal, but is attributed to the presence of nitrogen in the n-type substrate. Xu et al., p. 299. While Xu et al. does note that the N₂ON samples exhibit smaller ΔV_{fb} than the OX sample, the conclusion of Xu et al. is that N₂O grown devices provide much smaller flat-band voltage shift than N₂O-nitrided or thermal-oxide devices for 6H SiC. Xu et al., p. 300. As such, Applicants submit that Xu et al. teaches away from nitriding an existing oxide layer as recited in Claim 20. Accordingly, Applicants submit that Claim 20 is patentable over Xu et al. for at least these additional reasons.

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CONCLUSION

Applicants submit that the present application is in condition for allowance, which action is respectfully requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (919) 854-1400.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David C. Hall". The signature is fluid and cursive, with the first name "David" being more prominent.

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 18, 2005.

Traci A. Brown